July 4, 2014 FRI
Astronomical Data

Iridium Flare Info

Moon

Home

Year 2014 Month July Day 4 Time 20:29:00 Update Reset to now

Position

Altitude	38.8°
Azimuth	217.7°
Right ascension	$12^h\ 27^m\ 4^s$
Declination	-4° 31' 11"
Range	396,402 km
Constellation	Virgo

Appearance

Diameter	30.15'
Illumination of disk	46%
Libration in longitude	-6.253°
Libration in latitude	1.957°

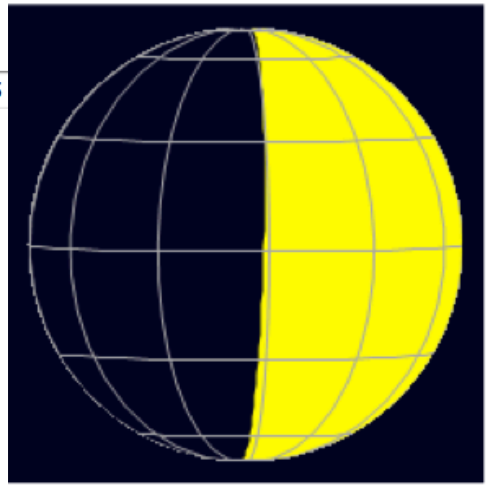
Event	Time	Altitude	Azimuth
Sets	-	-	-
Rises	12:33	-0.8°	94°
Maximum altitude	18:30	46.5°	179°

Monthly phases

New moon	27 June 2014 03:09
First quarter	05 July 2014 06:59
Full moon	12 July 2014 06:25
Last quarter	18 July 2014 21:08
New moon	26 July 2014 17:42

Sun

Year 2014 Month July Day 4 Time 13:50:35



Appearance of the Moon, celestial north is upwards

Daily events for 04 July

Event	Time	Altitude	Azimuth
Minimum altitude:	01:05	-28.5°	360°
Astronomical twilight begins:	03:45	-18.0°	38°
Nautical twilight begins:	04:30	-12.0°	47°
Civil twilight begins:	05:10	-6.0°	54°
Sunrise:	05:42	-0.8°	59°
Maximum altitude:	13:05	74.2°	180°
Sunset:	20:29	-0.8°	301°
Civil twilight ends:	21:00	-6.0°	306°
Nautical twilight ends:	21:40	-12.0°	313°
Astronomical twilight ends:	22:25	-18.0°	321°

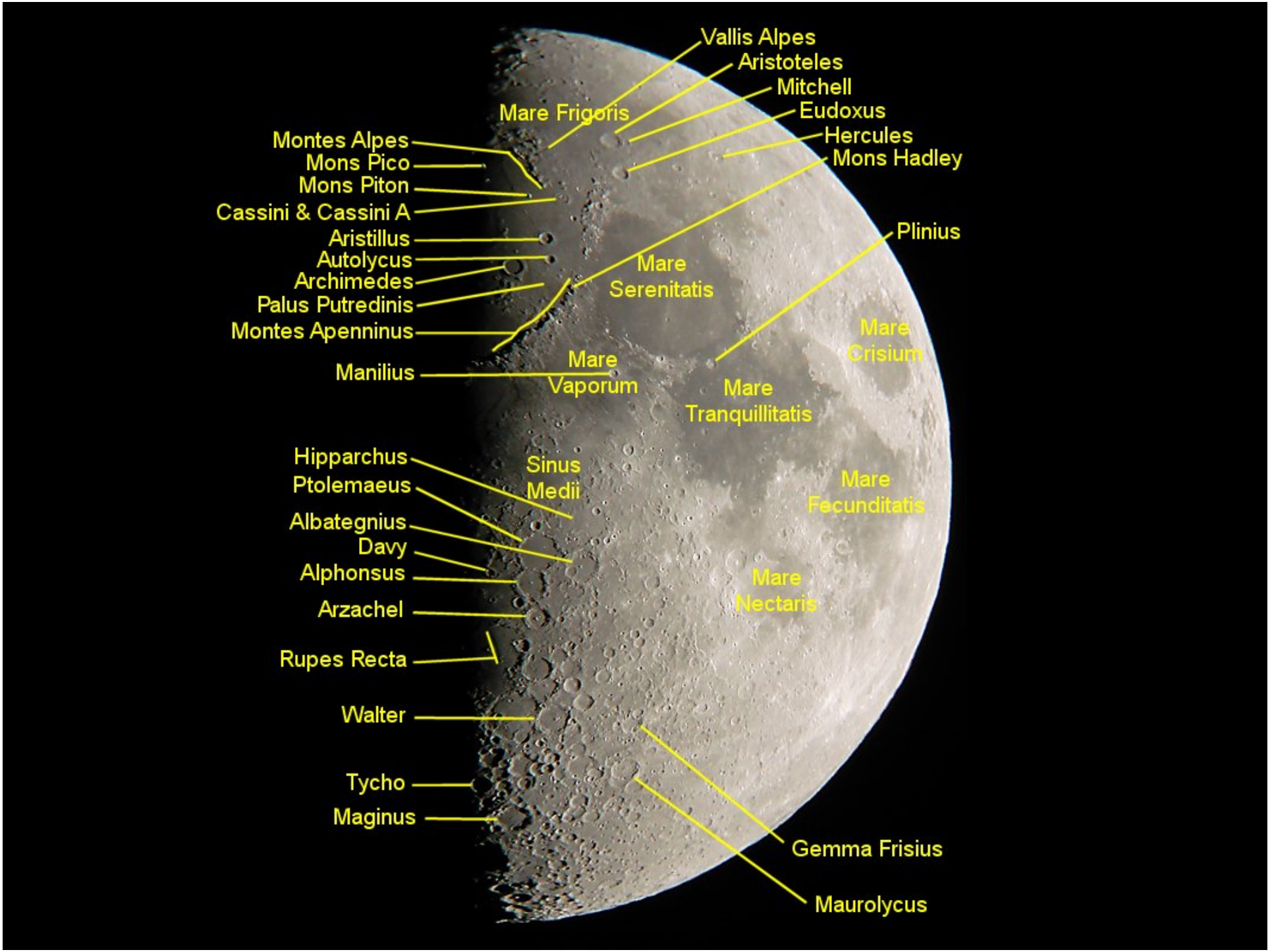
Yearly events for 2014

Event	Time
Spring equinox	Mar 20, 11:57
Summer solstice	Jun 21, 05:51
Autumn equinox	Sep 22, 21:29
Winter solstice	Dec 21, 17:03

Position at selected time

Altitude	71.5°
Azimuth	214.7°
Right ascension	$6^h\ 55^m\ 17^s$
Declination	22° 49' 37"
Range (AU)	1.0166801
Constellation	Gemini

July 4, 2014 FRI


Vallis Alpes
Aristoteles
Mitchell
Eudoxus
Hercules
Mons Hadley
Plinius
Mare Frigoris
Montes Alpes
Mons Pico
Mons Piton
Cassini & Cassini A
Aristillus
Autolycus
Archimedes
Palus Putredinis
Montes Apenninus
Manilius
Mare Serenitatis
Mare Crisium
Mare Vaporum
Mare Tranquillitatis
Hipparchus
Ptolemaeus
Albategnius
Davy
Alphonsus
Arzachel
Rupes Recta
Walter
Tycho
Maginus
Sinus Medii
Mare Fecunditatis
Mare Nectaris
Gemma Frisius
Maurolycus

Sunset: 20:29
Civil twilight ends: 21:00
Astronomical twilight ends: 22:24

July 4, 2014 FRI

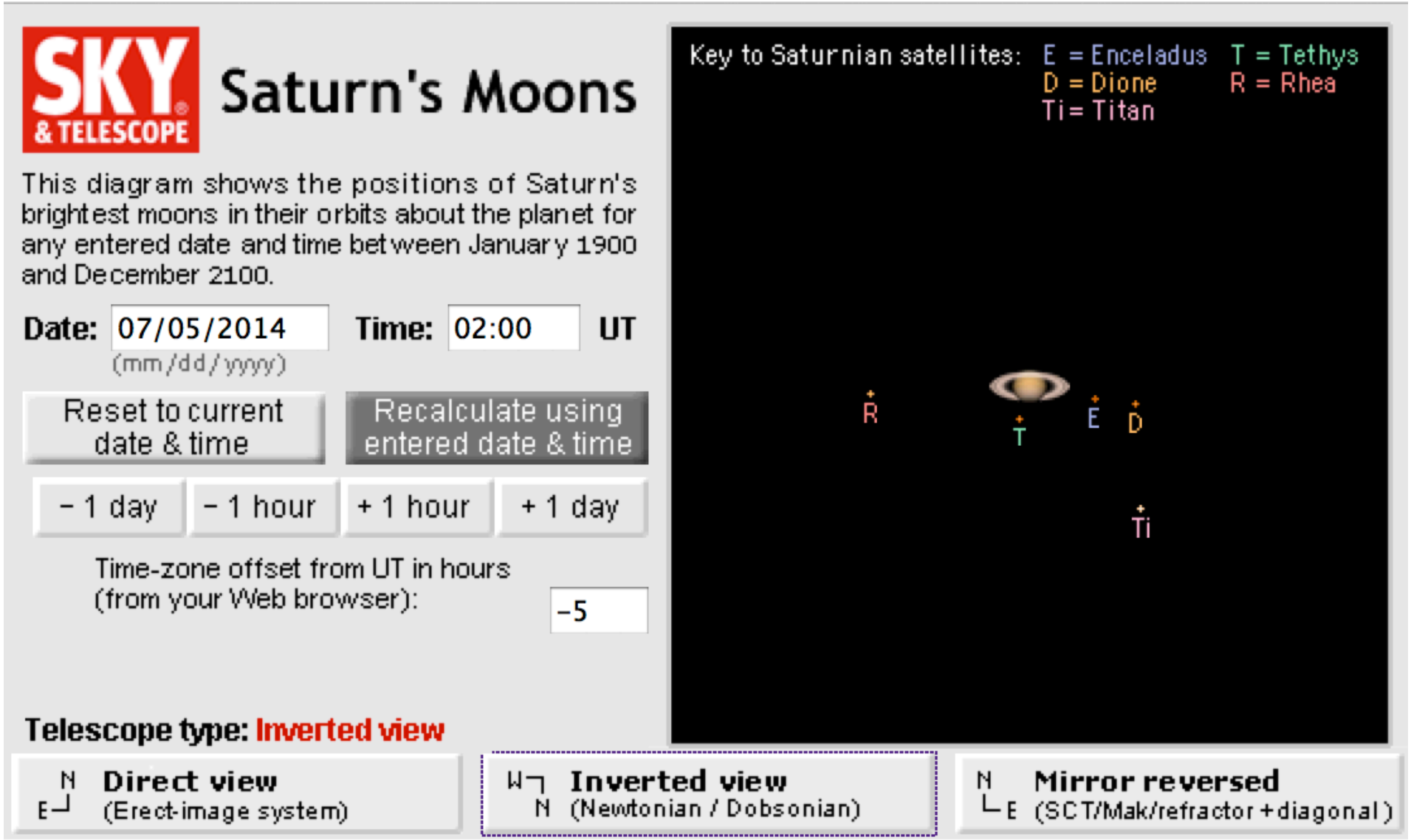
Planet Summary

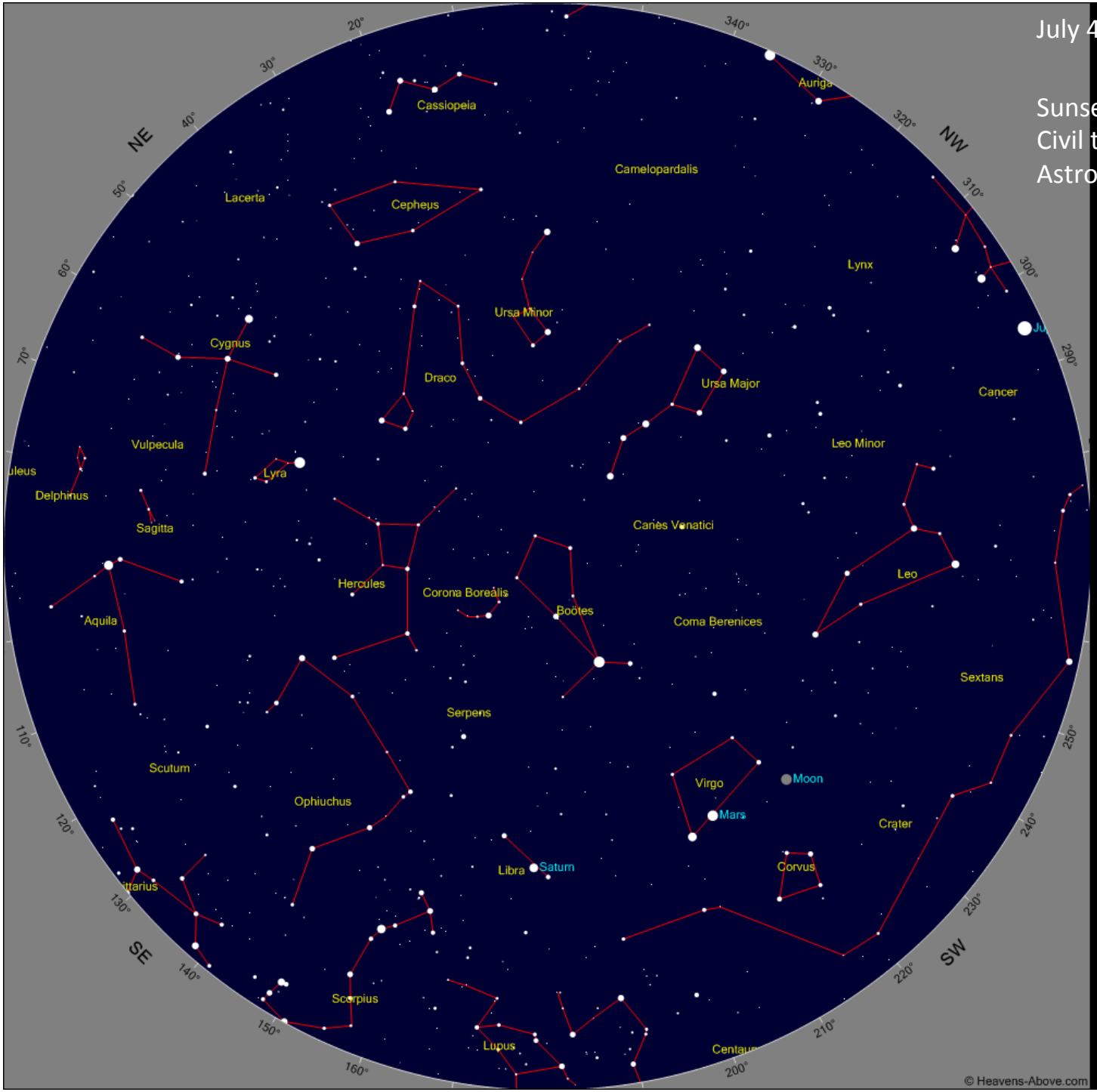
Year 2014 Month July Day 4 Time 21:00:(

Planet	D-Sun (AU)	D-Earth(AU)	D-Sun (miles)	D-Earth (miles)	Light Minutes	Light-Hours	100mph Trip (yrs)
Mercury	0.42	0.7	39,041,439	65,069,065	5.831	0.097	74.28
Venus	0.72	1.41	66,928,181	131,067,688	11.744	0.196	149.62
Earth	1.02	0	94,814,923	0	0.000		0.00
Mars	1.52	1.02	141,292,827	94,814,923	8.496	0.142	108.24
Jupiter	5.26	6.24	488,947,545	580,044,236	51.975	0.866	662.15
Saturn	9.91	9.31	921,192,047	865,418,563	77.546	1.292	987.92
Uranus	20.02	20.06	1,860,975,256	1,864,693,488	167.087	2.785	2128.65
Neptune	29.98	29.37	2,786,815,094	2,730,112,052	244.634	4.077	3116.57
Pluto	32.69	31.67	3,038,725,331	2,943,910,408	263.791	4.397	3360.63

	Mercury	Venus	Mars	Jupiter	Saturn	Uranus	Neptune	Pluto
Right ascension	$5^h\ 38^m\ 25.9^s$	$4^h\ 50^m\ 18.2^s$	$13^h\ 13^m\ 5.6^s$	$7^h\ 58^m\ 34.0^s$	$15^h\ 0^m\ 15.7^s$	$1^h\ 1^m\ 27.0^s$	$22^h\ 37^m\ 35.8^s$	$18^h\ 52^m\ 20.0^s$
Declination	19° 10' 35"	21° 12' 6"	-8° 21' 23"	21° 1' 12"	-14° 37' 20"	5° 49' 26"	-9° 27' 35"	-20° 16' 38"
Range (AU)	0.700	1.414	1.015	6.238	9.318	20.055	29.371	31.666
Brightness	1.7	-3.7	0.1	-1.6	1.0	5.8	7.9	14.1
Constellation	Taurus	Taurus	Virgo	Gemini	Libra	Pisces	Aquarius	Sagittarius
Meridian transit	11:47	10:58	19:21	14:07	21:08	07:12	04:48	01:04
Rises	04:44	03:46	13:48	06:56	15:57	00:54	23:16	20:09
Sets	18:51	18:10	00:57	21:18	02:23	13:29	10:17	05:54
Altitude	-20.2°	-24.0°	37.8°	3.3°	36.7°	-38.8°	-26.6°	8.4°
Azimuth	317.9°	329.6°	211.3°	294.4°	177.3°	36.0°	80.5°	124.6°
Inferior Conjunction	2014-Jun-19 2014-Oct-16	2014-Jan-11 2015-Aug-15	-	-	-	-	-	-
Opposition	-	-	2014-Apr-08 2016-May-22	2014-Jan-05 2015-Feb-06	2014-May-10 2015-May-22	2013-Oct-03 2014-Oct-07	2013-Aug-26 2014-Aug-29	2014-Jul-04 2015-Jul-06
Superior Conjunction	2014-Apr-25 2014-Aug-08	2013-Mar-28 2014-Oct-25	2013-Apr-17 2015-Jun-14	2013-Jun-19 2014-Jul-24	2013-Nov-06 2014-Nov-18	2014-Apr-02 2015-Apr-06	2014-Feb-23 2015-Feb-25	2014-Jan-01 2015-Jan-03
Max. eastern elongation	2014-May-25 2014-Sep-21	2013-Nov-01 2015-Jun-06	-	-	-	-	-	-
Max. western elongation	2014-Mar-14 2014-Jul-12	2014-Mar-22 2015-Oct-26	-	-	-	-	-	-
Perihelion	2014-May-02 2014-Jul-29	2014-Jan-23 2014-Sep-05	2013-Jan-24 2014-Dec-12	2011-Mar-17 2023-Jan-20	2003-Jul-26 2032-Nov-28	1966-May-21 2050-Aug-16	1876-Aug-26 2042-Sep-03	1989-Sep-05 2237-Sep-15
Aphelion	2014-Jun-15 2014-Sep-11	2014-May-16 2014-Dec-26	2014-Jan-02 2015-Nov-20	2005-Apr-14 2017-Feb-17	1988-Sep-11 2018-Apr-17	2009-Feb-26 2092-Nov-22	1959-Jul-16 2125-Dec-01	1866-Jun-04 2114-Feb-18

Saturn & Moons at 9pm, July 4, 2014



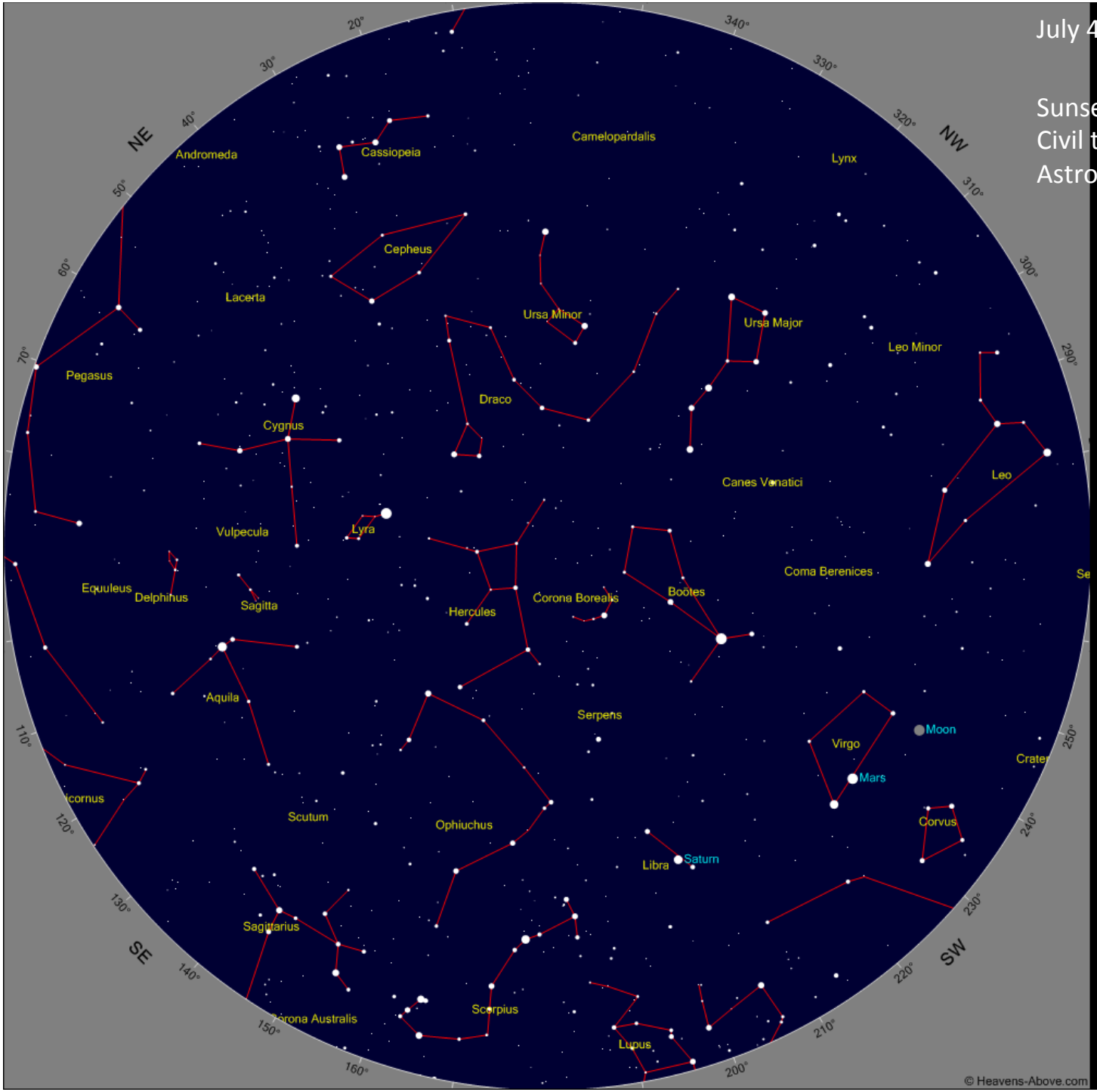


July 4, 2014 CT sky / 21:00

Sunset: 20:29
Civil twilight ends: 21:00
Astronomical twilight ends: 22:24

A 46% 1st quarter moon is in the SW (39 degrees elevation), close in the sky to Mars; Saturn is in the S; Jupiter is very low in the W (sets at 21:18).

At the end of Astronomical Twilight, we'll have Bootes, Ursa Major, Hercules, Draco, Lyra, Cygnus, Sagitta, well placed for observing.



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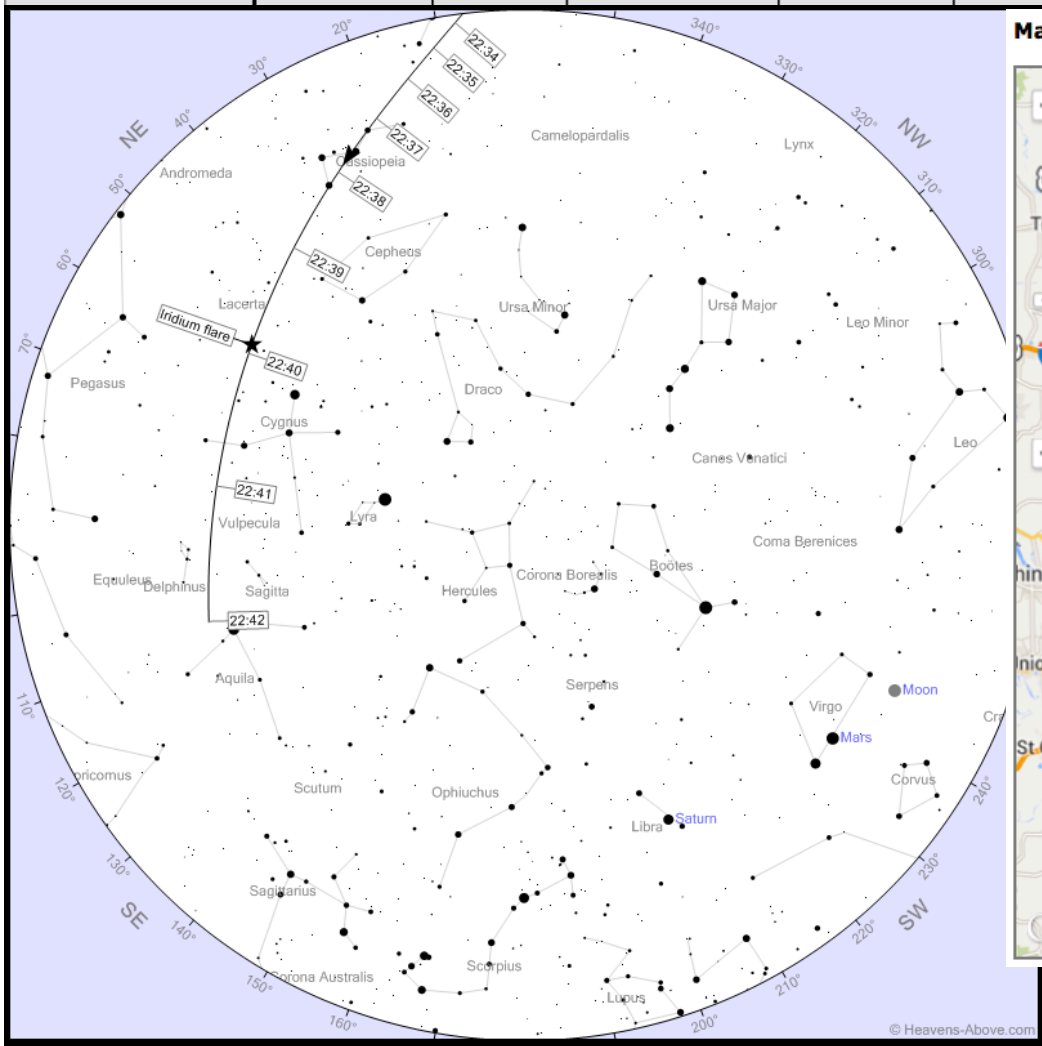
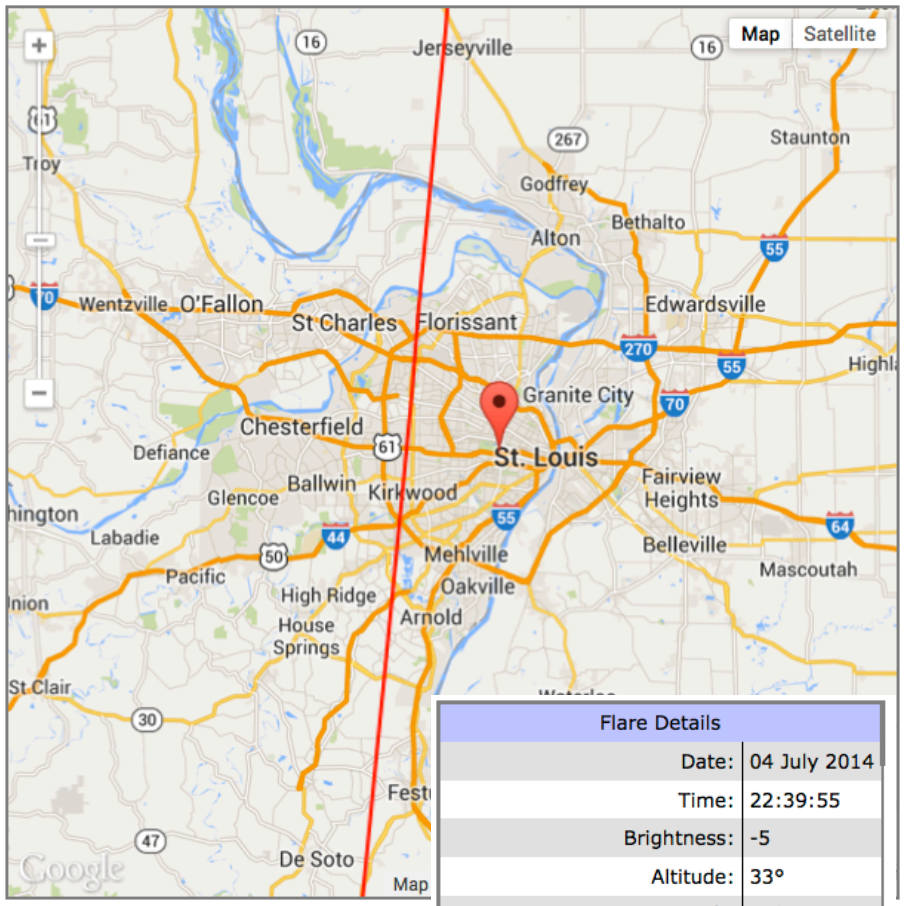
Time	Brightness	Altitude	Azimuth	Satellite	Distance to flare centre	Brightness at flare centre	Sun altitude
Jul 4, 22:39:55	-5.3	33°	57° (ENE)	Iridium 50	13 km (W)	-7.5	-20°



Map showing path of flare centre over Earth's surface



Flare Details	
Date:	04 July 2014
Time:	22:39:55
Brightness:	-5
Altitude:	33°
Azimuth:	57°
Satellite:	Iridium 50
Distance to satellite:	1283 km
Angle off flare centre-line:	0.3°
Distance to flare centre:	13 km
Flare producing antenna:	right
Sun altitude:	-19.7°
Angular separation from Sun:	102.5°

July 4, 2014 - 22:39:55 Iridium Flare

Two Moon-Planet Conjunctions Juice Up July

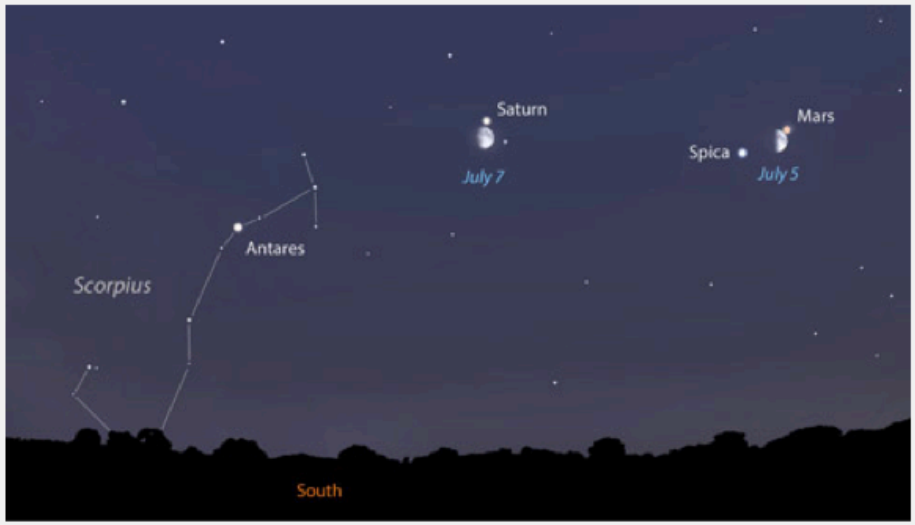
By: **Bob King** | July 1, 2014

On July 5th, the Moon has a remarkably close brush with Mars, followed two nights later by a similar rendezvous with Saturn.

July starts with a bang — and I'm not just talking about Independence Day fireworks!

Even if you're just a casual skywatcher, as darkness falls on July 5th you won't fail to note the Moon perched remarkably close to a ruddy "star" — actually the planet Mars — with the bright star Spica not far away. Then, two nights later, the Moon's eastward motion will park it close by the planet Saturn.

Why are these close encounters occurring? The Moon's path through the sky closely follows the *zodiac* — the band of a dozen constellations home to the wanderings of the Sun and planets. As it cycles around the sky each month, the Moon glides by each of the eight planets for a brief nightly visit — called a *conjunction.*



The waxing Moon does a conjunction "twofer" early this month, passing very close to Mars (and near Spica) on July 5th and not far from Saturn on July 7th. *Source: Stellarium*

The closer the conjunction and the brighter the planet the more striking the sight. I can't explain it, but few can resist the magnetic draw of two or more bright celestial objects side by side. We see beauty and meaning in these sometimes spectacular alignments.

July 5th: The Moon and Mars

On July 5th, skywatchers across much of North America and Canada will see the first quarter Moon glide just 30 arcminutes (one full Moon diameter) south of fiery bright Mars in Virgo at nightfall. Their separation will vary depending on your location. Across the east-central U.S., they'll be about ½˚ apart — but **the farther south you live, the choicer the view.**

The Moon and Mars on the evening of July 5, 2014, as seen from three U.S. cities around 10 p.m. local time.
Source: Stellarium

Intrepid observers up for a challenge can try spotting Mars shortly before sunset as it hovers just above the Moon's northern limb. (Hint: use binoculars.) Let me know, via a comment below, if you have success.

From Miami, only 10 arcminutes separate two bodies, tight enough that both cratered lunar landscape and ruddy Martian deserts can be viewed in the same high-power telescopic field of view. By the time the sky's dark for observers on the West Coast, the Moon will have moved eastward in its orbit, putting some 1½˚ (three lunar diameters) between it and the Red Planet.

Jet down to Quito, Ecuador, and the Moon will completely block Mars from view during an occultation lasting up to an hour.

Skywatchers in Bogota, Colombia, will see the Moon occult (cover) Mars at 9:12 p.m. local time on July 5th.
Source: Stellarium

As the map below shows, the occultation zone extends from northern South America south of Caracas, Venezuela, across the Amazon Basin to northern Chile. For details on disappearance and reappearance times for cities across South America, check out the International Occultation Timing Association's Mars Occultation site<. Remember that the times shown there are Universal Time (UT); subtract 4 hours for EDT, 5 for CDT, 6 for MDT, and 7 for PDT.

Super-close Pairing of Ceres and Vesta

By: **Alan MacRobert** | July 1, 2014

It's rare that two sizable asteroids pair together in the sky as closely as Ceres (the biggest of all) and Vesta (the brightest) do in early July.

For the past few months, two of the biggest and brightest asteroids — 1 Ceres and 4 Vesta — have been gliding in parallel just 2° or 3° apart in eastern Virgo. They've been visible in binoculars all that time and gradually drawing closer together in the sky.

This week their months-long dance reaches its denouement, as the king and queen of the asteroid belt appear to embrace closer than anyone has ever seen them. They'll appear just 10 arcminutes apart (a third of the Moon's apparent diameter) on the evenings of July 4th and 5th in the Americas (July 5th and 6th Universal Time). They'll remain near one another for the next few weeks, separated by 2.2° on August 1st and by 5° on September 1st.

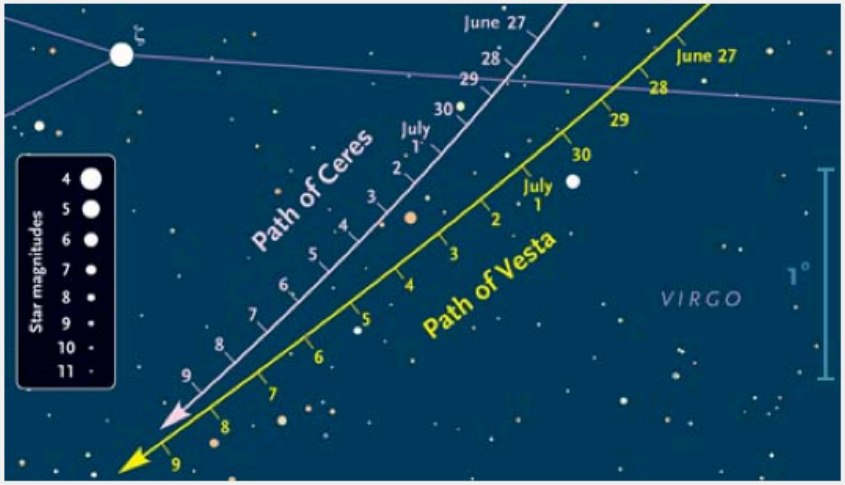
How to Spot Ceres and Vesta Tonight

If you've always wanted to view an asteroid, this is a great opportunity. Right now the Ceres-Vesta pairing is moderately high in the southwest at nightfall (30° high if you're near 40° north latitude), so you'll have time to track them down shortly after twilight ends before they become too low.

Mars and the star Spica are your starting points, as shown on the wide-field chart below. This planet-star pairing has been tightening as well: they're 5½° apart on July 1st and just 1.3° apart on July 13th, the date when they appear closest together. They'll be joined on the evening of July 5th by a just-past-first-quarter Moon that skirts especially close to Mars.

Look 10° above the planet-star combo — the width of your fist on an outstretched arm — to find the 3rd-magnitude star Zeta (ζ) Virginis, also known as Heze. It's the faint peak of a narrow, wizard-hat-shaped triangle with Mars and Spica at its base. Ceres and Vesta are inside that triangle, situated roughly side by side and just 1½° below (southwest of) Zeta.

If you carefully note the asteroids' positions, you should be able to monitor their night-to-night motion (likewise about 10 arcminutes) with respect to the surrounding stars.

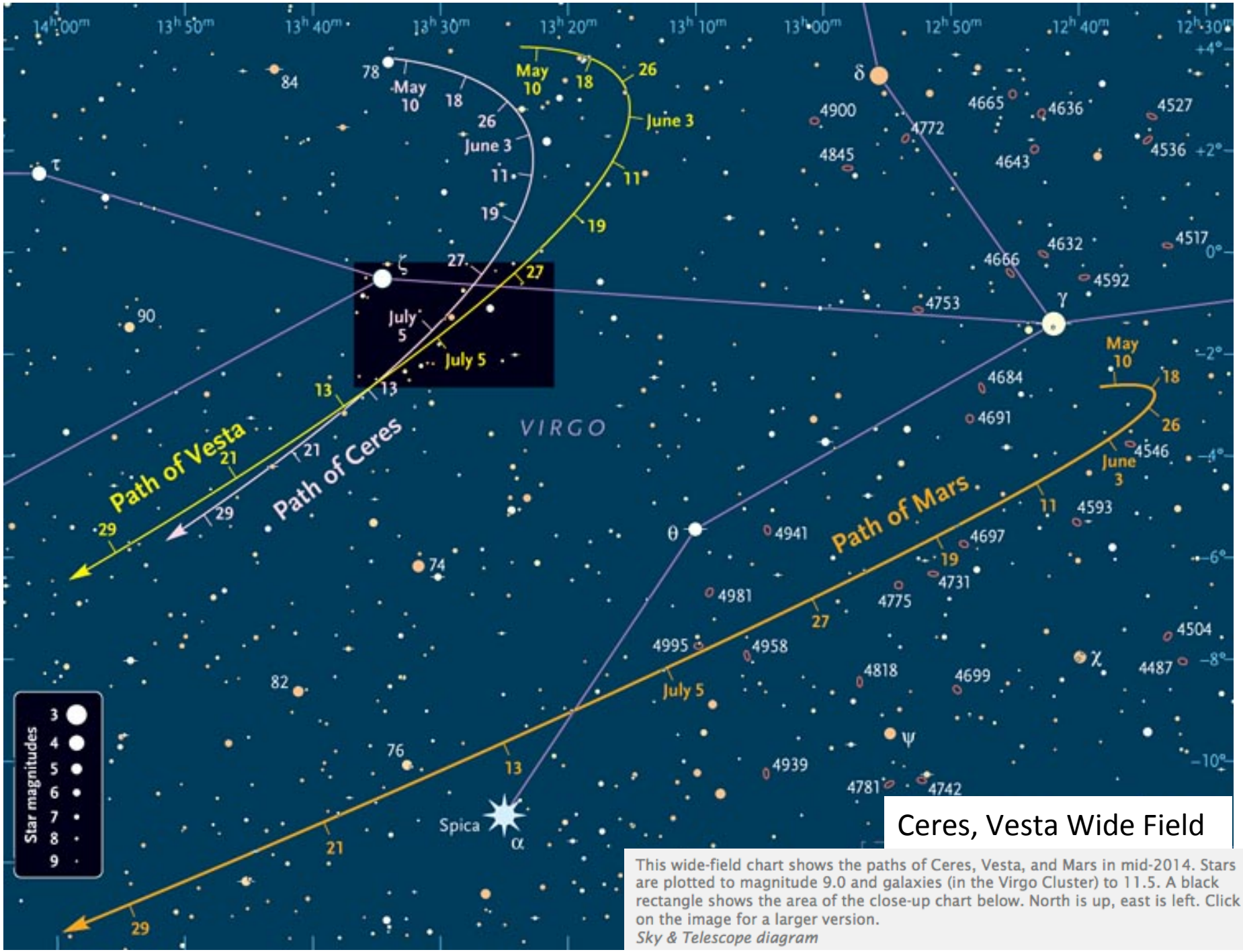


Vesta is 7th magnitude and Ceres is 8th as they swing together near Mars and Spica. The date ticks are plotted for 0^h Universal Time, corresponding to evening of the previous date for those in North America. Put a pencil mark on each of the paths to interpolate for the date and time you plan to look. Click on the image for a larger version.
Sky & Telescope diagram

These two "dwarf planets" were brightest when at opposition back in April, and since then they've lost some luster. In early July, Ceres is magnitude 8.5 and brighter Vesta is 7.2. And yet Ceres, with a diameter of 585 miles (940 km), is nearly twice as large as Vesta. It looks fainter partly because it's farther away — 46 million miles (74 million km) beyond Vesta on July 5th — and because it's farther from the Sun as well. So, while they *look* close together in the sky, they're really not.

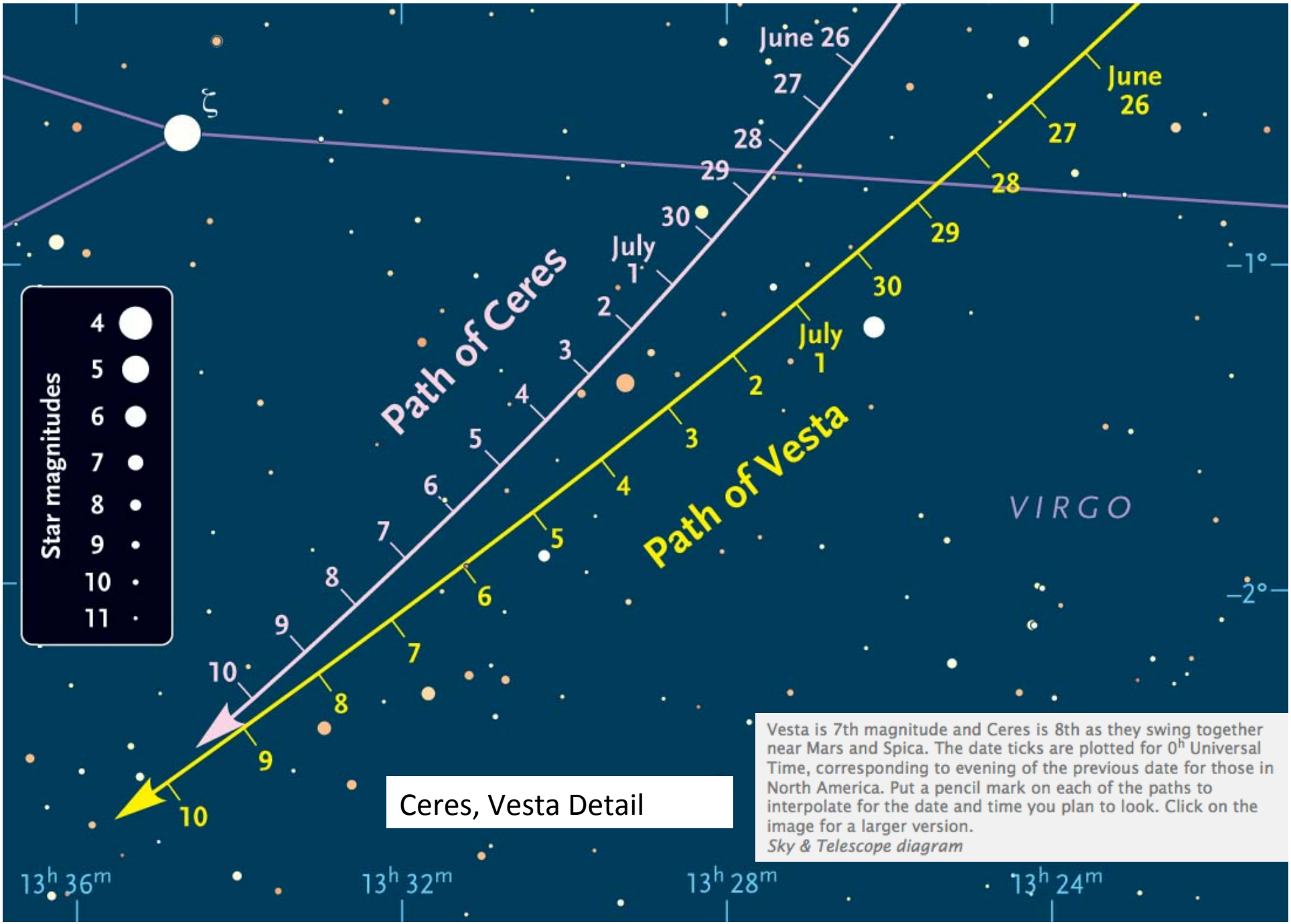
Ceres also has a much darker surface. Vesta is medium gray, reflecting 42% of the sunlight striking it (a high *albedo*, or reflectivity, for an asteroid), while Ceres is a more typical dark gray-brown with an albedo of only 9%.

Quite near the two asteroids on the sky, though utterly invisible, is NASA's Dawn spacecraft. It's en route from its successful 2011-12 mission at Vesta to its next mapping project at Ceres, where it will take up permanent orbit next March. Hubble images reveal Ceres to have a patchwork of bright and dark markings — hints of interesting landscapes awaiting Dawn.



Ceres, Vesta Wide Field

This wide-field chart shows the paths of Ceres, Vesta, and Mars in mid-2014. Stars are plotted to magnitude 9.0 and galaxies (in the Virgo Cluster) to 11.5. A black rectangle shows the area of the close-up chart below. North is up, east is left. Click on the image for a larger version.
Sky & Telescope diagram



Ceres, Vesta Detail

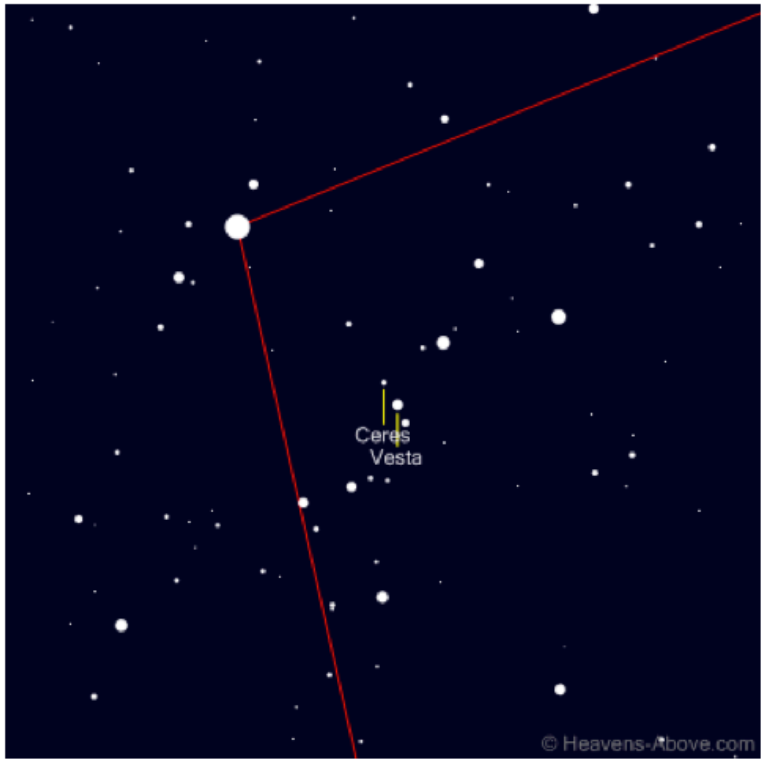
Vesta is 7th magnitude and Ceres is 8th as they swing together near Mars and Spica. The date ticks are plotted for 0^h Universal Time, corresponding to evening of the previous date for those in North America. Put a pencil mark on each of the paths to interpolate for the date and time you plan to look. Click on the image for a larger version.
Sky & Telescope diagram

Asteroid 1 Ceres

Asteroid Ceres July 4, 2014 data (10pm CDST)

Year 2014 Month July Day 4 Time 21:00:00 Update Reset to now

Coarse finder chart
(Field of view=60°, Limiting magnitude=5)



Fine finder chart
(Field of view=5°, Limiting magnitude=10)

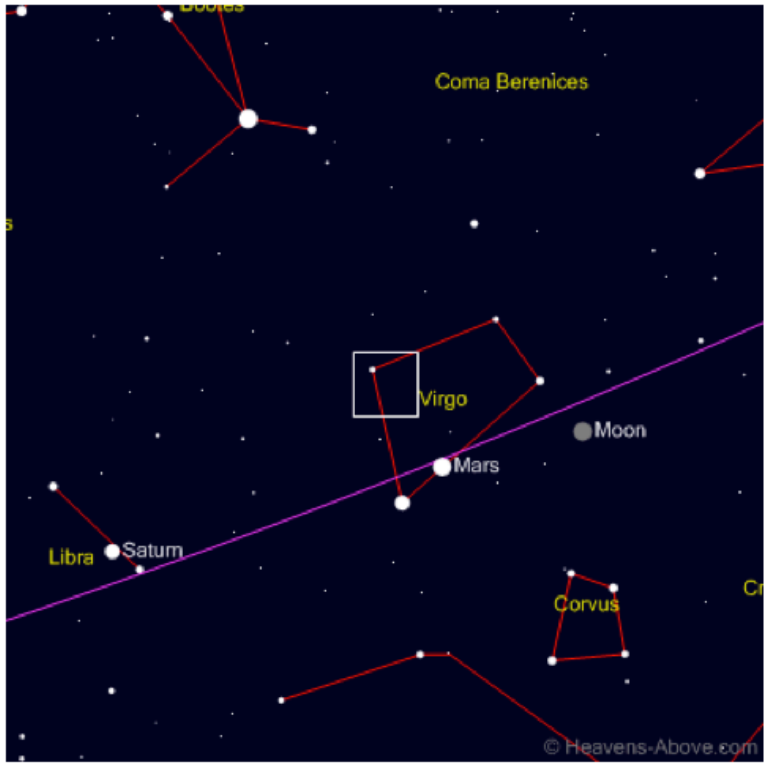
Position	
Right ascension	$13^h\ 30.8^m$
Declination	-1° 38'
Constellation	Virgo
Magnitude	8.4
Distance from Earth	2.335 AU

Orbit	
Distance from Sun	2.685 AU
Perihelion	2.557 AU (06/02/2009)
Aphelion	2.979 AU
Period	4.61 years
Eccentricity	0.076167
Inclination to ecliptic	10.6°
Epoch	18/04/2013

Asteroid 4 Vesta

Asteroid Vesta July 4, 2014 data (10pm CDST)

Year 2014 Month July Day 4 Time 22:00:00 Update Reset to now



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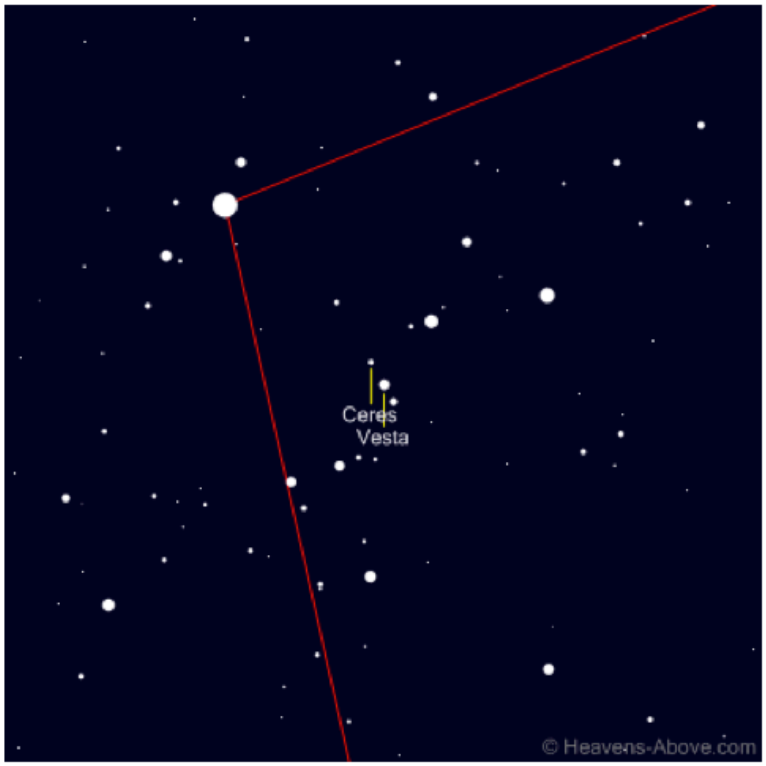

Fine finder chart
(Field of view=5°, Limiting magnitude=10)

Position	
Right ascension	13^h 30.5^m
Declination	-1° 47'
Constellation	Virgo
Magnitude	7.1
Distance from Earth	1.771 AU

Orbit	
Distance from Sun	2.171 AU
Perihelion	2.154 AU (04/02/2011)
Aphelion	2.571 AU
Period	3.63 years
Eccentricity	0.088257
Inclination to ecliptic	7.1°
Epoch	18/04/2013